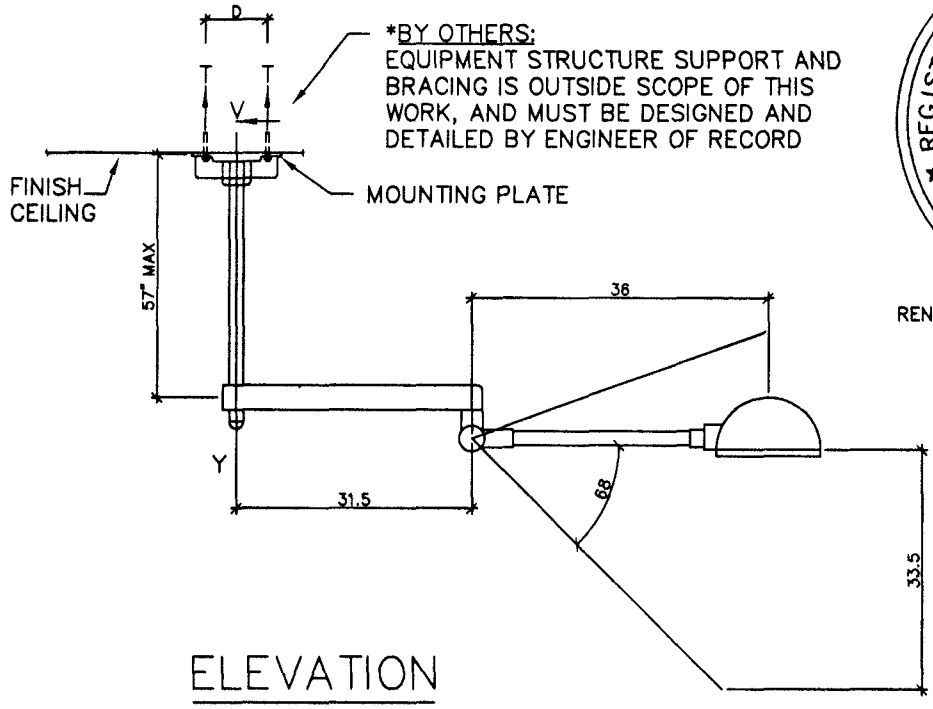
FIROUZI CONSULTING ENGINEER, INC.		
SKYTRON SURGICAL PRODUCTS	DES.	SHEET
MERILUX X1 CM FOR SEISMIC ZONE (4), SOIL PROFILE (Sd) NEAR SOURCE FACTOR = 1.5	FCE JOB No. DATE: 10-08-03	1 OF 4 SHEETS

SEISMIC ANCHORING BOLT DESIGN

CM



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
HOMAYOUN J. KHADVI
No. 2798
10.08.03
STRUCTURAL
STATE OF CALIFORNIA

RENEWAL FEE DUE DATE: 06-30-06

NOTES:

1. SCOPE OF WORK: DESIGN OF BOLTS CONNECTING MOUNTING PLATE TO STRUCTURE ONLY.
2. FORCES ARE DETERMINED PER 2001 CALIFORNIA BUILDING CODE – SECTION 1632A, (INCLUDING UP TO DATE REVISIONS) AND HAVE BEEN FACTORED TO REPRESENT WORKING DESIGN LOADS, NOT ULTIMATE
3. FORCES ARE MAXIMUMS AND OCCUR WHEN EQUIPMENT IS MOVED TO ITS MOST ECCENTRIC POSITION.
4. PROVIDE CEILING STRUCTURE DESIGNED AND DETAILS TO SUPPORT WEIGHTS AND FORCES SHOWN (BY ENGINEER OF RECORD FOR THE BUILDING)
5. ENGIINEER OF RECORD TO DESIGN, DETAIL AND VERIFY STRUCTURE AND/ OR EXISTING LIGHT SUPPORT TRACTS TO SUPPORT INDICATED LOADS
6. HORIZONTAL FORCES AND MOMENT MAY OCCUR IN ANY DIRECTION, ACTING AT THE TOP OF MOUNTING PLATE.

DESIGN CRITERIA:

FORMULA 32A-1: $F_P = 4.0\ Ca*Ip*Wp$

TABLE 16A-Q : $Ca = 0.44*Na = 0.44*1.5 = 0.66$ (For zone 4 & S_D)

TABLE 16A-K : Ia = 1.5 (For essential facility)

$\therefore F_P = (4.0)(0.66)(1.5)Wp = 3.96\ Wp$ (For LRFD)

$F_P = 3.96Wp/1.4 = 2.83Wp$ (For ASD)

FORMULA 30A-1: $E = p*E_h + E_v$

$E_h = F_P$

p = 1.0 (FOR COMPONENT)

$E_v = (0.5)Ca*Ip*Wp$

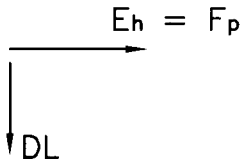
$= (0.5)(0.66)(1.5)Wp = 0.5Wp$ (For LRFD)

$= 0$ (For ASD)

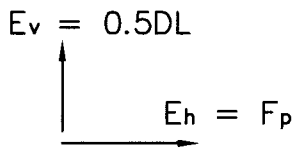
SECTION 1630A.11: $E_v = (0.7)Ca*I*Wp$

$= (0.7)(0.66)(1.5)/1.4 = 0.5Wp$ (For ASD) [NET UPLIFT FORCE]

LOAD COMBINATION CASE A



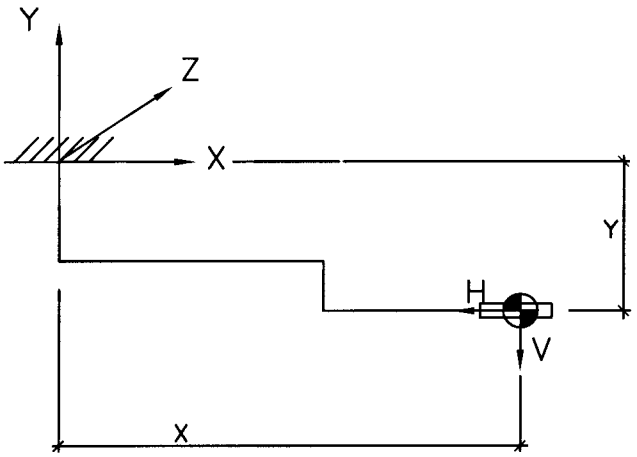
LOAD COMBINATION CASE B



BY COMPARISION LOAD, COMBINATION A GOVERNS

FIROUZI CONSULTING ENGINEER, INC.

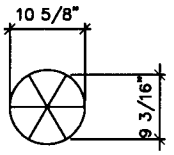
SKYTRON SURGICAL PRODUCTS	DES.	SHEET
MERILUX X1 CM FOR SEISMIC ZONE (4), SOIL PROFILE (Sd) NEAR SOURCE FACTOR = 1.5	FCE JOB No. DATE: 10-08-03	3 OF 4 SHEETS



CASE I

D = 9.2 "
Vd : Dead Load
Ve : Vertical Seismic Load
He : Horizontal Seismic Load

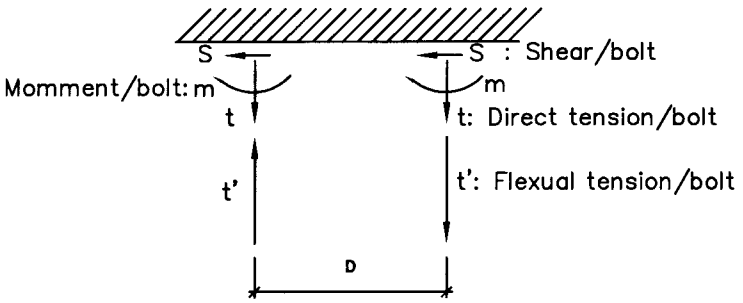
Ø = 10.63"
D = 9.2"

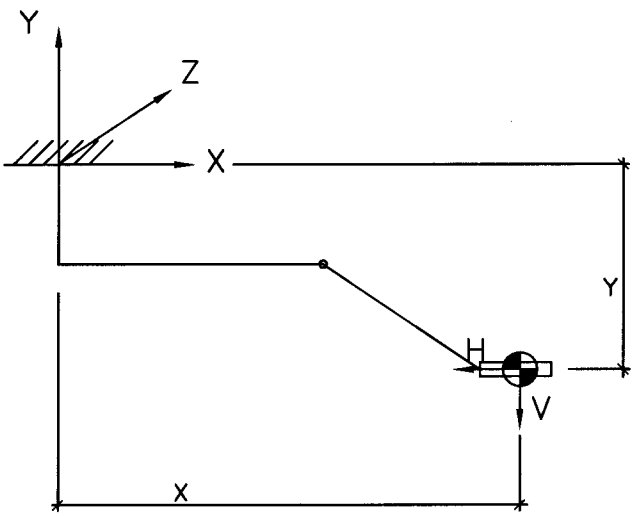


CASE I

(LATERAL FORCE ACTING PARALLEL TO EITHER SIDES OF EQUIPMENT)

D = 9.2"
Vd = 46.5 #
Y = 57 "
X = 31.5+36 = 67.5 "
Ve = 0.50 x 46.5 = 23.3 #
He = 2.83 x 46.5 = 131.6 #
S = 131.6 / 6 = 21.9 #
t = (46.5 + 23.3)/6 = 11.6 #
Total Mzz = (46.5 + 23.3)x 67.5 + 131.6 x 57 = 12212 "#
t' = 12212 /(9.2 x 2) = 663.7#





CASE I

CASE II

(LATERAL FORCE ACTING DIAGONALLY)

D = 9.2"
Vd = 46.5 #
Y = 57+33.5 = 90.5"
X = 31.5+36x(COS68°) = 45 "
Ve = 0.50 x 46.5 = 23.3 #
He = 2.83 x 46.5 = 131.6 #
S = 131.6 / 6 = 21.9 #
t = (46.5 + 23.3)/6 = 11.6 #
Total Mzz = (46.5 + 23.3)x 45 + 131.6 x 90.5 = 15050 "#
t' = 15050 /(9.2x2) = 818 # GOVERNS

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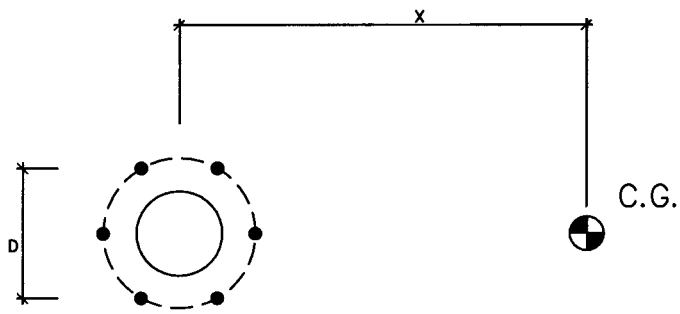
SKYTRON SURGICAL PRODUCTS	DES.	SHEET
MERILUX X1 CM FOR SEISMIC ZONE (4), SOIL PROFILE (Sd) NEAR SOURCE FACTOR = 1.5	FCE JOB No.	4
	DATE: 10-08-03	OF 4 SHEETS



CHECK 6-1/2" DIA. A307 BOLTS:

ALLOWABLE TENSION: 3000 #
ALLOWABLE SHEAR: 2000 #

fv/Fv + ft/Ft = 0.01 + 0.27 = 0.28 <1.0 OK

USE 6-1/2" DIA. A307 BOLTS